US005253067A

United States Patent [19]

Chaney et al.

[11] Patent Number: 5,253,067

[45] Date of Patent: Oct. 12, 1993

[54] **CHANNEL LABELING APPARATUS FOR A TELEVISION RECEIVER WHEREIN GRAPHICS AND TEXT LABELS MAY BE SELECTED FROM A PREPROGRAMMED LIST**

[75] Inventors: **John W. Chaney; James E. Hailey,** both of Indianapolis, Ind.

[73] Assignee: **Thomson Consumer Electronics, Inc.,** Indianapolis, Ind.

[21] Appl. No.: **807,469**

[22] Filed: **Dec. 16, 1991**

[51] **Int. Cl.**[5] **H04N 9/74;** H04N 5/50

[52] **U.S. Cl.** **358/191.1;** 358/183; 358/22

[58] **Field of Search** 358/191.1, 192.1, 193.1, 358/194.1, 183, 22, 188

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Primary Examiner—James J. Groody

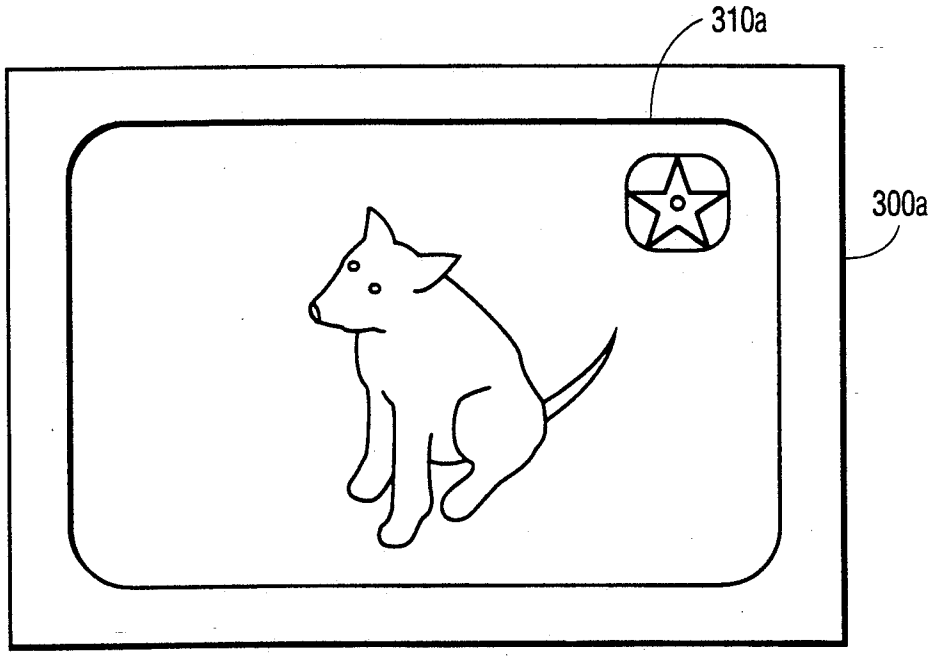
Assistant Examiner—John W. Miller

Attorney, Agent, or Firm—Joseph S. Tripoli; Peter M. Emanuel; Thomas F. Lenihan

[57] **ABSTRACT**

It is herein recognized that it is desirable that a television receiver provide preprogrammed labels for many widely-used television networks. The user has only to select the proper channel and then select a corresponding preprogrammed label from a list in order to associate the channel and label. In one embodiment the preprogrammed label is a graphically-formed logo or service mark of the television network.

4 Claims, 5 Drawing Sheets



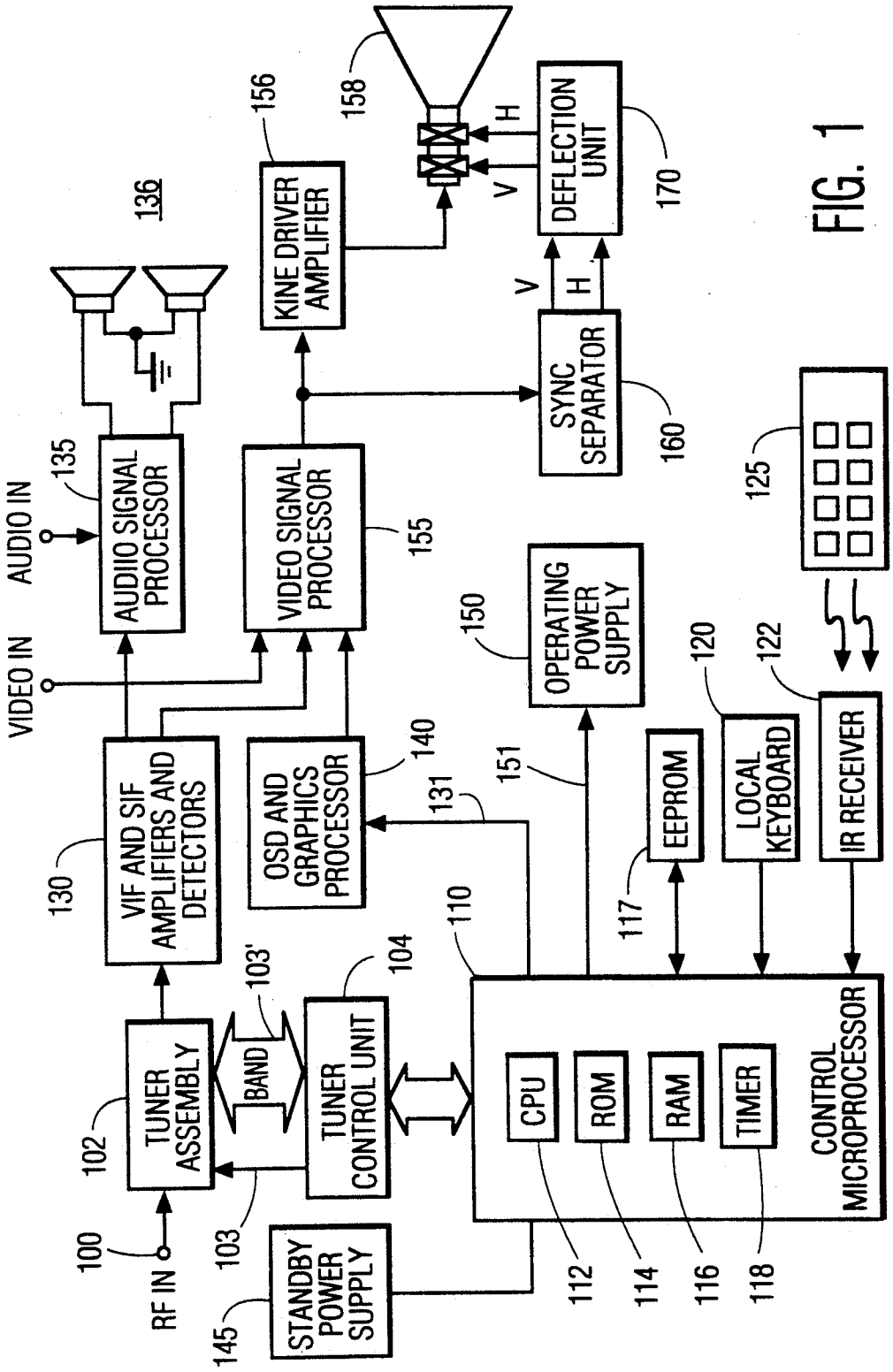

RF IN
100
TUNER ASSEMBLY
102
103
BAND
103'
TUNER CONTROL UNIT
104
110
CONTROL MICROPROCESSOR
CPU
ROM
RAM
TIMER
112
114
116
118
STANDBY POWER SUPPLY
145
VIF AND SIF AMPLIFIERS AND DETECTORS
130
OSD AND GRAPHICS PROCESSOR
140
131
VIDEO IN
AUDIO IN
AUDIIO SIGNAL PROCESSOR
135
136
VIDEO SIGNAL PROCESSOR
155
KINE DRIVER AMPLIFIER
156
158
DEFLECTION UNIT
170
H
V
SYNC SEPARATOR
160
OPERATING POWER SUPPLY
150
151
EEPROM
117
LOCAL KEYBOARD
120
IR RECEIVER
122
125

FIG. 1

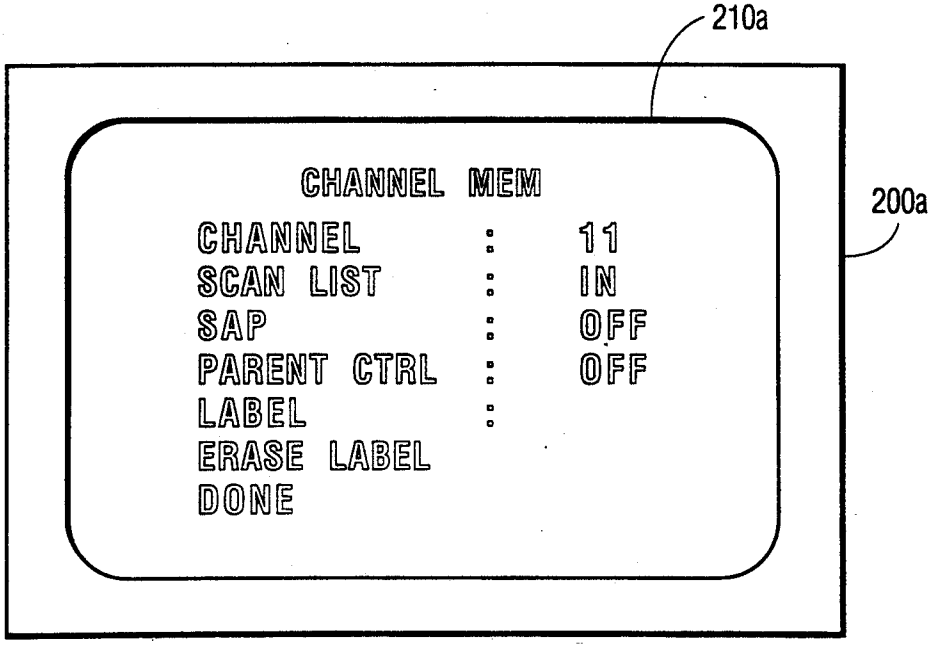

210a
CHANNEL MEM
CHANNEL : 11
SCAN LIST : IN
SAP : OFF
PARENT CTRL : OFF
LABEL :
ERASE LABEL
DONE
200a

FIG.2a

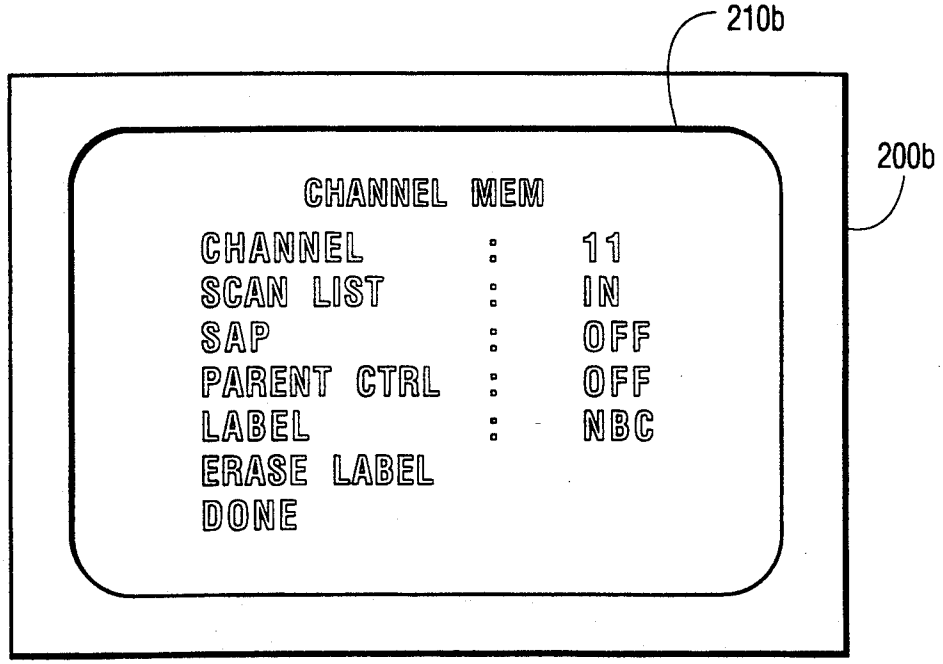

210b
CHANNEL MEM
CHANNEL : 11
SCAN LIST : IN
SAP : OFF
PARENT CTRL : OFF
LABEL : NBC
ERASE LABEL
DONE
200b

FIG.2b

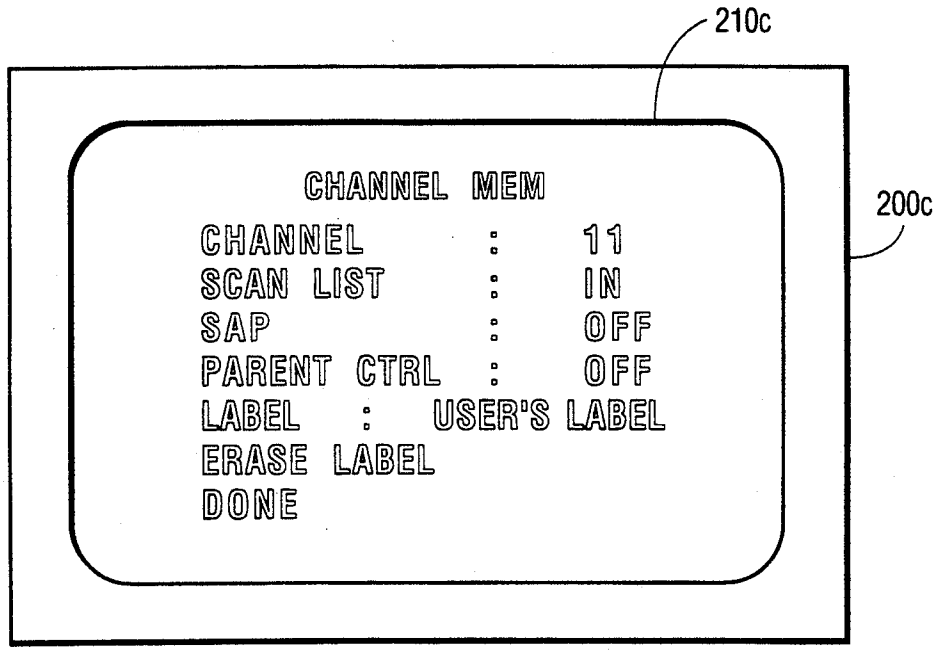

210c
CHANNEL MEM
CHANNEL : 11
SCAN LIST : IN
SAP : OFF
PARENT CTRL : OFF
LABEL : USER'S LABEL
ERASE LABEL
DONE
200c

FIG. 2c

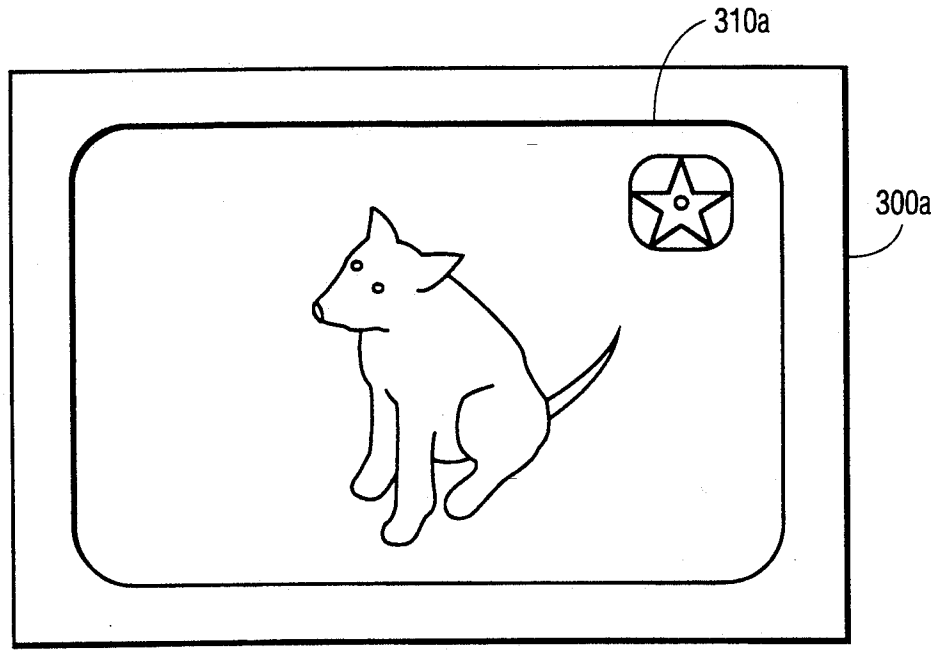


FIG. 3a

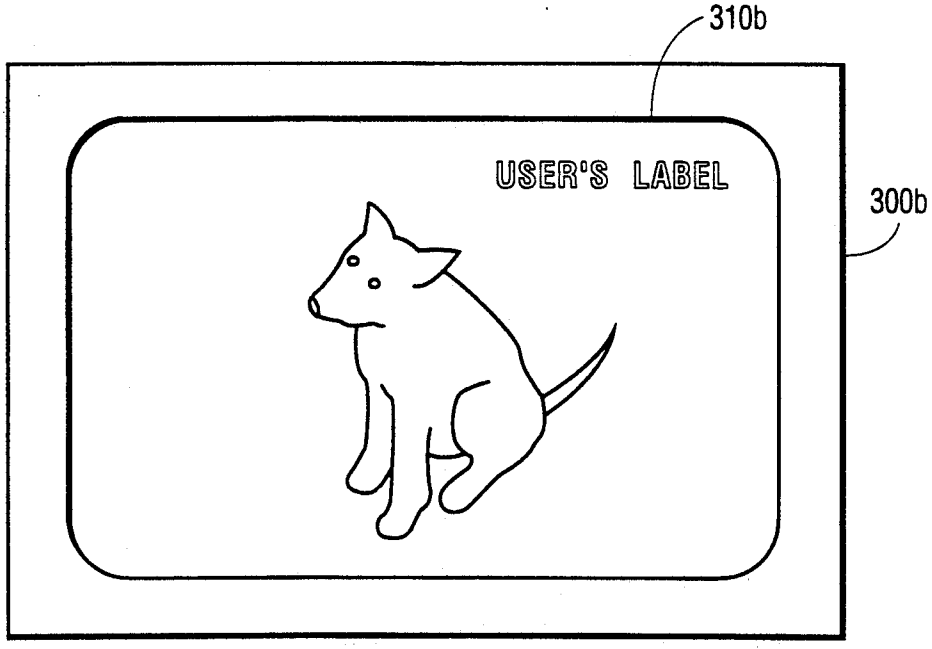


FIG. 3b

CHANNEL LABELING APPARATUS FOR A TELEVISION RECEIVER WHEREIN GRAPHICS AND TEXT LABELS MAY BE SELECTED FROM A PREPROGRAMMED LIST

This invention concerns television receivers having a channel labelling function.

BACKGROUND OF THE INVENTION

Many modern television receivers include a channel labelling feature in which a user is asked to enter a suitable label for each channel. This may be done by selecting individual letters from a running display of letters, or by entering letters from an alphabetical keyboard on a remote control unit. Such a channel labelling feature is known from, for example, RCA CTC-140 type television receivers manufactured by Thomson Consumer Electronics Incorporated, Indianapolis, Ind.

Unfortunately, this process can take an inordinate amount of time and patience on the user's part given that modern cable television services may deliver as many as 125 channels.

SUMMARY OF THE INVENTION

It is herein recognized that it is desirable that a television receiver provide preprogrammed labels for many widely-used television networks. The user has only to select the proper channel and then select a corresponding preprogrammed label from a list in order to associate the channel and label. In one embodiment the preprogrammed label is a graphically-formed logo or service mark of the television network.

BRIEF DESCRIPTION OF THE DRAWING

FIG. **1** is a block diagram of a portion of a television receiver suitable for implementing the invention.

FIGS. *2a–2c* are illustrations of screen displays produced in accordance with the invention.

FIGS. *3a* and *3b* are illustrations of channel labels displayed on screen.

DETAILED DESCRIPTION OF THE DRAWING

Referring to FIG. **1**, a television receiver includes an RF input terminal **100** which receives radio frequency (RF) signals and applies them to a tuner assembly **102**. Tuner assembly **102** selects and amplifies a particular RF signal under control of a tuner controller **104** which provides a tuning voltage via a wire **103**, and bandswitching signals via signal lines represented by the broad double-ended arrow **103'**, to tuner assembly **102**.

Tuner assembly **102** converts the received RF signal to an intermediate frequency (IF) signal and provides an IF output signal to video (VIF) and sound (SIF) amplifier and detector unit **130**. VIF/SIF amplifier and detector unit **130** amplifies the IF signal applied to its input terminal and detects the video and audio information contained therein. The detected video information is applied as one input of a video processor unit **155**. The other input of video processor unit **155** is connected to an on-screen display and graphics processor circuit **140**. The detected audio signal is applied to an audio processor **135** for processing and amplification before being applied to a speaker assembly **136**.

Tuner controller **104** generates the tuning voltage and bandswitching signals in response to control signals applied from a system control microcomputer (μC) **110**. The terms "microcomputer", controller, and "microprocessor", as used herein, are equivalent. It is also recognized that the control function of microcomputer **110** may be performed by an integrated circuit especially manufactured for that specific purpose (i.e., a "custom chip"), and the term "controller", as used herein, is also intended to include such a device. Microcomputer **110** receives user-initiated commands from an infrared (IR) receiver **122** and from a "local" keyboard **120** mounted on the television receiver itself. IR receiver **122** receives IR transmissions from remote control transmitter **125**. Microcomputer **110** includes a central processing unit (CPU) **112**, a program memory (ROM) **114**, and stores channel-related data in a random-access memory (RAM) **116** RAM **116** may be either internal to, or external to, microprocessor **110**, and may be of either the volatile or non-volatile type. The term "RAM" is also intended to include electrically-erasable programmable read only memory (EEPROM) **117**. One skilled in the art will recognize that if volatile memory is utilized, it may be desirable to use a suitable form of standby power to preserve its contents when the receiver is turned off.

Microcomputer **110** operates from a source of standby power **145**, and controls a source of operating power **150** via a control line **151** for selectively applying power to the remainder of the television receiver. Microcomputer **110** also includes a timer **118**. Microcomputer (or controller) **110** generates a control signal for causing tuner control unit **104** to control tuner **102** to select a particular RF signal, in response to user-entered control signals from local keyboard **120** and from infrared (IR) receiver **122**.

Tuner **102** produces a signal at an intermediate frequency (IF) and applies it to a processing unit **130** comprising a video IF (VIF) amplifying stage, an AFT circuit, a video detector, and a sound IF (SIF) amplifying stage. Processing unit **130** produces a first baseband composite video signal (TV), and a sound carrier signal. The sound carrier signal is applied to an audio signal processor unit **135** which includes an audio detector and may include a stereo decoder. Audio signal processor unit **135** produces a first baseband audio signal and applies it to a speaker unit **136**. Second baseband composite video signals and second baseband audio signals may be applied to VIDEO IN and AUDIO IN terminals from an external source.

The first and second baseband video signals (TV) are coupled to a video processor unit **155** (having a selection circuit not shown) Under control of controller **110**, an on-screen display processor **140** generates character signals and graphics signals, and applies them to a second input of video signal processor **155**, for inclusion in the processed video signal. Electrically-erasable programmable read only memory (EEPROM) **117** is coupled to controller **110**, and serves as a non-volatile storage element for storing autoprogramming channel data, and user-entered channel data.

The processed video signal at the output of video signal processor unit **155**, is applied to a Kine Driver Amplifier **156** for amplification and then applied to the guns of a color picture tube assembly **158** for display. The processed video signal at the output of video signal processor unit **155**, is also applied to a Sync Separator unit **160** for separation of horizontal and vertical drive signals which are in turn applied to a deflection unit **170**. The output signals from deflection unit **170** are applied to deflection coils of picture tube assembly **158** for controlling the deflection of its electron beam. The

television receiver described thusfar with the exception of OSD and GRAPHICS PROCESSOR **140** is known, for example, from the RCA CTC-140 color television manufactured by Thomson Consumer Electronics, Inc., Indianapolis, Ind.

The invention will now be described with reference to the remainder of FIG. **1**, the menu displays of FIGS. **2***a*-**2***c*, and the screen displays of FIGS. **3***a* and **3***b*.

FIG. **2***a* shows a menu screen called up by a user wanting to enter a label for channel **11**. To modify the label, the user highlights the LABEL line by using the + and − keys of remote control unit **125** to move up and down through the menu and by selecting the label line by pressing its SELECT key. Then user then presses the + and − keys to step through a preprogrammed list of labels. FIG. **2***b* shows the preprogrammed label NBC. If the user desires to enter the preprogrammed label NBC, he simply presses the SELECT key of remote control unit **125**. If, on the other hand, the user cannot find an appropriate preprogrammed label, then he steps through the list until he finds the label YOU ENTER. Upon selecting the YOU ENTER label, the user may enter his own label by pressing the +, −, and SELECT keys of remote control unit **125** until he has spelled the desired label. To further illustrate this point, FIG. **2***c* shows a user-entered label USER"S LABEL, and FIG. **3***b* shows the user-entered label displayed on the screen **310***b* of a television receiver **310***a*.

OSD and GRAPHICS PROCESSOR unit **140** of FIG. **1**, includes the capability of producing high resolution graphics for display on the screen of picture tube assembly **158**, under control of controller **110**. Controller **110** communicates with OSD and GRAPHICS PROCESSOR unit **140** via a digital control bus **131**. One of the capabilities of OSD and GRAPHICS PROCESSOR unit **140** is the ability to generate graphics logos or service marks of various sizes on the screen. FIG. **3***a* shows a television receiver **300***a*, having a screen **310***a* showing a video image with the logo a television network displayed in the upper right corner. Data corresponding to this logo is stored in ROM and generated by OSD and GRAPHICS PROCESSOR unit **140**. The procedure for associating a graphics logo with a television channel is the same as that given above for selecting a text label. That is, the user steps through a list of preprogrammed text labels until he finds the proper one, for example NBC. Upon selecting NBC, controller **110** causes OSD and GRAPHICS PROCESSOR unit **140** to substitute a preprogrammed graphics logo, if one exists in memory, for the corresponding text label.

A constructed and tested version of the invention includes **108** preformed labels and memory space for **19** user-entered labels.

What is claimed is:

1. A television receiver, comprising:

means for entering data in response to operation by a user;

memory means for storing data representative of a preprogrammed label;

control means coupled to said memory means for reading said data from said memory means; and

on-screen display and graphics generator means coupled to said control means for producing text character video signals and graphics video signals for display, said text character and graphics video signals corresponding to said stored data;

said control means associating said stored data representative of a preprogrammed label with a television channel in response to data input by a user.

2. The apparatus of claim **1** wherein said preprogrammed label is a network logo or service mark.

3. The apparatus of claim **1** wherein said preprogrammed label comprises text characters.

4. The apparatus of claim **1** wherein a portion of said data entered by said user is data representative of an alternative text label.

* * * * *